

This Page Is Inserted by IFW Operations
and is not a part of the Official Record

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images may include (but are not limited to):

- BLACK BORDERS
- TEXT CUT OFF AT TOP, BOTTOM OR SIDES
- FADED TEXT
- ILLEGIBLE TEXT
- SKEWED/SLANTED IMAGES
- COLORED PHOTOS
- BLACK OR VERY BLACK AND WHITE DARK PHOTOS
- GRAY SCALE DOCUMENTS

IMAGES ARE BEST AVAILABLE COPY.

**As rescanning documents *will not* correct images,
please do not report the images to the
Image Problem Mailbox.**

PATENT SPECIFICATION



Application Date : Aug. 13, 1935. No. 22787/35.

444,292

Complete Specification Left : Nov. 15, 1935.

Complete Specification Accepted : March 18, 1936.

PROVISIONAL SPECIFICATION

Improvements in and relating to Roller Thrust-bearings

We, THE HOFFMANN MANUFACTURING COMPANY LIMITED, a British Company, and CHARLES HENRY SMITH, a British Subject, both of the Company's Works, 5 Chelmsford, Essex, do hereby declare the nature of this invention to be as follows:—

This invention relates to roller thrust bearings adapted for use with rotating shafts or the like under conditions where-in the load is very heavy but only a slow or occasional rotation of the rollers takes place and wherein the individual axes of the rollers are substantially at right 10 angles to the axis of rotation of the shaft or the like. A roller thrust bearing used with a variable pitch air propeller is an example of the use above referred to wherein a very heavy thrust is developed 15 and rotation occurs only occasionally when the pitch of the blade is altered.

According to the invention a roller thrust bearing for use under the conditions referred to is provided with a spacing cage formed by a pair of upper and 20 lower annular plates arranged at a dis-

tance from the centres of the rollers and having openings therein through which the rollers project. The plates may be secured together in any suitable manner. 30 For example each plate may be in the form of a channel the sides of the channel on one plate being adapted to engage the channel on the other plate and rivets or other securing means may be used. 35

By using a cage of the above construction the distance between the rollers may be small, compared with a solid cage of equal dimensions wherein pockets are bored for the reception of the rollers and 40 a large amount of metal is necessarily left between the pockets, so that the plate cage can contain more rollers.

The cage may be used with bearings containing a single row of rollers or any 45 other desired number of rows.

Dated this 13th day of August, 1935.

ABEL & IMRAY,
30, Southampton Buildings,
London, W.C.2,
Agents for the Applicants.

COMPLETE SPECIFICATION

Improvements in and relating to Roller Thrust-bearings

We, THE HOFFMANN MANUFACTURING COMPANY LIMITED, a British Company, and CHARLES HENRY SMITH, a British Subject, both of the Company's Works, 50 Chelmsford, Essex, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained 55 in and by the following statement:—

This invention relates to roller thrust bearings for use under conditions where-in the load is very heavy but only a slow or occasional rotation of the rollers takes 60 place.

The invention is particularly adapted for use with variable pitch propellers where a very heavy thrust is developed and rotation occurs only occasionally 65 when the pitch of the blade is altered.

In aircraft it is essential that idle weight be kept down to a minimum and it is an object of the invention to provide a

roller thrust bearing which while being adequate for its purpose is at the same time light in comparison with known 70 bearings.

It is a further object of the invention to provide a roller thrust bearing having 75 comparatively low overall dimensions.

The present invention employs, in a manner previously proposed, a cage formed by a pair of upper and lower annular-like plates arranged at a distance from the centres of the rollers and having openings therein through which the rollers project but instead of having a comparatively heavy outer closing ring which fills the space between the plates and on which the rollers bear, according to the invention, one or both plates have flanges or bent portions which permit the plates to be directly connected one to the other. 85

The bearing according to the inven- 90

[Price 1/-]

tion may be formed in segments each formed as a unitary structure comprising plates and rollers, which when placed together form the complete bearing.

5 An example of a construction is shown in the accompanying drawings, in which:

Fig. 1 is a sectional side elevation,

Fig. 2 a fragmentary plan, and

10 Fig. 3 a developed section on line A—A of Fig. 2.

Referring to the drawings, two annular plates 1 and 2 are provided with radial slots in which fit rollers 3. The plates are spaced apart by a substantial distance as shown in Fig. 3.

15 In the drawings, two rollers are shown end to end in each slot, but any number of rows of rollers may, of course, be employed. The two plates 1, 2 form a cage and in the drawings are shown connected together by forming the plates each with a channel section and spot welding the sides of the channels together.

20 The plates may, of course, be fastened together by other means as, for example, by rivetting the channel sides. The edges of the channels may in a further method be interfolded.

25 Again, one plate only may be formed 30 as a channel and its edges bent or crimped over the other plate.

A unit construction embodying the 35 invention such as is described above is adapted to lie between race tracks formed on the structural elements of the mount-

ing of a variable pitch propeller or between loose separate races.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to 40 be performed, we declare that what we claim is:—

1. A roller thrust bearing having a cage composed of two spaced annular-like plates each radially slotted to receive one or more rows of rollers in which one or both plates have flange or bent portions which permit the plates to be directly connected one to the other.

2. A roller thrust bearing as claimed in 50 Claim 1 in which the plates are both formed with channel sections and adjacent sides of the two plates are joined together.

3. A roller thrust bearing as claimed in 55 Claim 1 in which one plate is formed with a channel section and its edges are bent over and crimped to the other plate.

4. A variable pitch propeller embodying a roller thrust bearing as claimed in 60 any of the preceding claims.

5. A roller thrust bearing as claimed in 65 Claim 1 in which adjacent edges of the plates are interfolded.

Dated this 14th day of November, 1935.

ABEL & IMRAY,
30, Southampton Buildings,
London, W.C.2.
Agents for the Applicants.

Leamington Spa: Printed for His Majesty's Stationery Office, by the Courier Press.—1936.

FIG. 1.

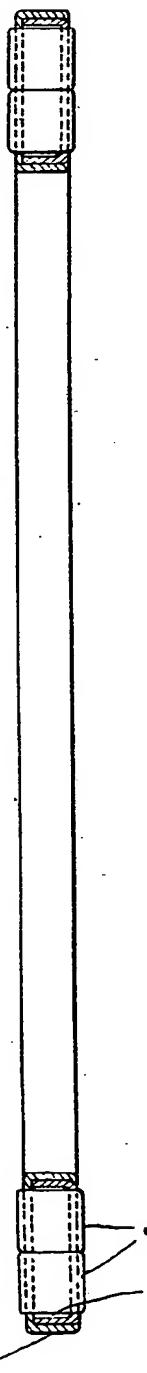


FIG. 2.

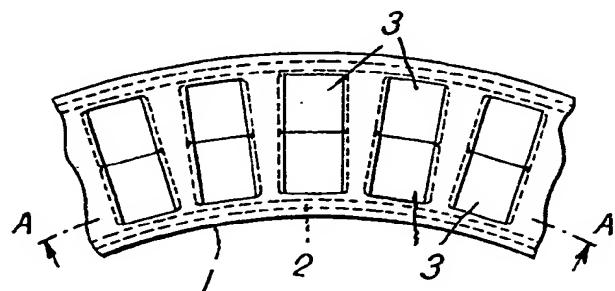
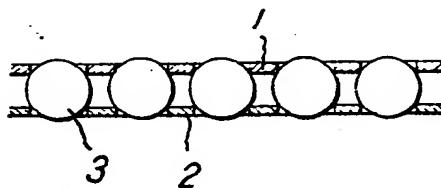


FIG. 3.



[This Drawing is a reproduction of the Original on a reduced scale.]

THIS PAGE BLANK (USPTO)